UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Modernizing Electricity Market Design	**)**	**Docket No. AD21-10-000**

Pre-Technical Conference Comments of Tom Kaslow, FirstLight Power Inc.

FirstLight Power Inc. (FirstLight) appreciates the opportunity to participate as a panelist in the May 25th Technical Conference on Resource Adequacy in the Evolving Electricity Sector: ISO New England (Technical Conference). FirstLight believes the capacity market contributions associated with state policy resource investments should be recognized, and such reform must deliver an efficient market exit signal. FirstLight is pleased to provide the following comments for Commission consideration in advance of the May 25 discussion.

Background

FirstLight is a leading clean power producer and energy storage company with a portfolio that includes nearly 1.4GW of pumped-hydro storage (including Northfield Mountain, the largest energy storage facility in New England), battery storage, hydroelectric generation, and solar generation—one of the largest clean energy generation portfolios operating in New England today. Our company's mission is to accelerate the decarbonization of the electric grid by owning, operating, and integrating large-scale renewable energy and storage assets to meet the region's growing clean energy needs and to deliver an electric system that is clean, reliable, affordable, and equitable. FirstLight therefore strongly supports states' efforts to increase the quantity of clean energy used to supply consumers' electric needs and to decarbonize the electric grid. FirstLight also has extensive operating experience in the New England wholesale markets and understands directly the incentives, disincentives and operating consequences of the market rules as they stand today.

State of the Capacity Market in ISO-NE Today

The ISO New England Inc. (ISO-NE) Forward Capacity Market (FCM) essentially procures a set of energy call options to assure that peak electric demand needs can be reliably met. Each resource which clears in the Forward Capacity Auction (FCA) receives a Capacity Supply Obligation (CSO) that obligates the resource to offer its energy into the day ahead and real-time energy markets, and its operating reserve into the real-time market,[1] consistent with the flexibility inherent in its design and subject to market monitoring, with potential for mitigation, of its energy price (collectively, a "reliability call option"). Each CSO megawatt therefore supplies a unique reliability call option value with some CSOs providing much higher reliability call option value than others.

[1] While there is currently no day ahead operating reserve market in New England, flexible resources are still relied upon to achieve a day ahead energy solution that securely satisfies operating reserve needs.

While a resource with a CSO "may not declare an Economic Outage, defined as a request by a Market Participant for a Generator Maintenance Outage for the removal of a generating resource from service for purely economic reasons associated with market conditions,"[2] some resources, even when in compliance with CSO obligations, will simply not contribute much of anything to peak period support throughout an entire Commitment Period and for all practical purposes, will be paid to be on the equivalent of an Economic Outage in most, if not, all hours. The bottom-line is that not all CSOs provide the same value despite the fact that the current FCM design pays all CSOs cleared in the Forward Capacity Auction (FCA) the same clearing price.[3] Some CSO megawatts are effectively so far out of economics in peak periods that they contribute very little incrementally because their (i) energy price level is so high, (ii) unit characteristics are so inflexible, or (iii) energy output duration is too short to support the full peak demand. Or, a combination of those factors that make their selection for dispatch so expensive they essentially will not be scheduled because other CSO megawatts will be used to meet peak energy and operating reserve needs.

Resources frequently used to support the system experience greater costs, including the need for regular reinvestment, in order to continue to provide reliable service. They often have a higher FCA revenue threshold than resources rarely, if ever, asked to do much. Reforming the Minimum Offer Price Rule (MOPR) without addressing the flawed FCM retirement signal could lead to disorderly exit, increasing the risk of resource de-list requests rejected for reliability (a.k.a., RMR agreements), or put pressure on resources that are frequently needed to defer reinvestment.

Reforms Must be Focused on the Desired End State

Reform of the MOPR in New England should be targeting "a resource adequacy paradigm that respects states' role in shaping the generation mix and while at the same time ensuring that . . . responsibilities under the [Federal Power Act]" are satisfied.[4] In a competitive wholesale capacity market, just and reasonable capacity compensation is achieved through efficient FCM operation, including efficient market exit driven by an effective retirement signal. The FCM should be sending signals for the system to return to FCA equilibrium prices consistent with an efficient fleet evolution that rewards the resources that contribute the most while encouraging the least value reliability call options to retire when the market is surplus. Unfortunately, this is not occurring today as existing retirement disincentives slow efficient exit. With major change in the composition of the energy supply planned and underway, the condition precedent to successful reform of the MOPR in New England is fixing the flawed FCM retirement signal. At this important juncture, FirstLight is hopeful that the Commission, New England states and ISO-NE leadership can keep a keen eye on the destination: a future system

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[2] ISO-New England Inc., Filing Containing Revisions to Market Rules Implementing FCM Settlement Agreement at 155, Docket Nos. ER07-546-000, *et al*. (filed Feb. 15, 2007).

[3] In cases where the FCA has price separation of export or import-constrained capacity zones, all resources within the same capacity zone are paid the same clearing price.

[4] *ISO New England Inc.*, 162 FERC ¶ 61,205 (2018) (CASPR Order) (Commissioner Glick, comments dissenting in part and concurring in part at 6).

that continues reliable supply of electricity under a rapid shift to large quantities of new carbon free energy while preserving competitive market signals for all resources, new and existing, needed to efficiently achieve that future.

This focus is particularly important since the relatively short schedule reflected in ISO-NE's May 17 memorandum[5] could shrink collective thinking to meet a schedule, versus increasing resources to meet the urgency of finding a durable solution, and lead to a suboptimal or even ineffective outcome. The region's electricity system is at a crossroads and FirstLight strongly urges the Commission, ISO-NE and all stakeholders to use this moment to focus on the health of the market, and not a focus on solutions that just address a single aspect of the immediate problem. In other words, reforming MOPR to speed new supply entry in the FCA without fixing the FCM exit signal will cure one aspect of the immediate issue, but will not deliver a good result for New England.

ISO-NE Q1 2022 Filing Target

According to the May 17, 2021 memo, ISO-NE intends to "make a filing with the FERC to eliminate the MOPR in time for Forward Capacity Auction (FCA) 17" with the "dual objective of eliminating MOPR and maintaining competitive capacity market pricing."[6] While the time preceding the targeted Q1 2022 filing date time period is short relative to the time normally taken to consider projects not subject to a deadline, the entire FCM Settlement Agreement was developed in a four-month period.[7] Certainly further modification to address the dual objectives, including consideration of the concept FirstLight provides in Appendix A, could occur in the nine months preceding ISO-NE's targeted filing date. Delivering some market design components (e.g., Q1 2022 MOPR reform package) earlier without commitment to some aspects of the more comprehensive design (e.g., Effective Load Carrying Capability (ELCC), can lead to later disinterest, or, even objection to the latter, and risks failure in achieving a durable market design. The tone set by the Commission, whether through direct order or through less formal guidance, affects stakeholder process engagement and cooperation.

FirstLight supports the dual objectives outlined in the ISO-NE May 17 memo and believes those objectives can best be addressed by fixing the flawed FCM retirement signal to facilitate reform of the MOPR.[8] The Commission should also be cognizant of regional differences between New England and PJM Interconnection, L.L.C. (PJM). The level of state policy resources seeking immediate entry by removing MOPR may have less dramatic impact in PJM given its much larger market size relative to its current level of state policy entry while the level of state policy resource entry enabled by MOPR removal in ISO-NE without retirement

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5 ISO-NE Memorandum re Elimination of MOPR and Maintaining Competitive Pricing (May 17, 2021), *at* a0_memo_on_elimination_of_mopr.pdf (iso-ne.com) (ISO-NE May 17 Memo).

6 *Id*. at 1.

7 *Devon Power LLC*, 115 FERC ¶ 61,340 at P 15 (2006).

8 This dual objective is quite similar to principles applied in the development of the Competitive Auctions with Sponsored Policy Resources (CASPR), which FirstLight also supported.

signal reform could be much more dramatic and damaging, absent contemporaneously facilitating efficient market exit.[9]

Addressing the Underlying FCM Problem

The root of the problem with FCM is the absence of a good retirement signal, a consequence of a disconnect between the FCM compensation to each resource irrespective of the reliability support value delivered to capacity buyers by each resource.[10] In FCA shortage, and even at equilibrium (i.e., supply just equals Net Installed Capacity Requirement), all capacity supply megawatts provide equal value in meeting the resource adequacy requirement *because* all of those megawatts are needed to just meet resource adequacy criteria. However, in surplus (i.e., FCA cleared supply exceeds Net ICR), this does not remain true. Once the minimum resource adequacy requirement is met, the value of incremental reliability contributions differ by resource because each resource presents vastly different reliability call option value to consumer energy and operating reserve needs.[11] With respect to these capacity supply resources:

- Some are inflexible but predictable and almost always in the money (e.g., nuclear).
- Some are very flexible and help ISO-NE reliably meet forecast errors, significant ramps and resolve contingencies (e.g., Fast Start resources).
- Some have more certain fuel firmness (e.g., pumped storage).
- Some have greater firm fuel duration (e.g., combined cycle with on-site oil back-up).

Other qualified capacity presents combinations which present much less valuable options when in surplus. Specifically:

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[9] The shape of the ISO-NE Marginal Reliability Impact (MRI) demand curve reduces price (and total capacity charges) dramatically with even small quantities of new entry permitted below the costs of that new entry. As an example, under the FCA15 MRI demand curve, clearing surplus of only approximately 1,330 MW moved the price from $8.707/kw-month down to approximately $2.605/kw-month, an almost $2.4B reduction in aggregate capacity payments/charges that equates to an avoided capacity charge value of approximately $150/kw-month for each additional new megawatt of supply not offset by existing resource exit. Adding only another 2,000MW of incremental capacity clear would have moved the clearing price from $2.61/kw-month to *zero* (an avoided capacity charge value of approximately $56/kw-month for each additional new megawatt of supply not offset by existing resource exit). This is why the MOPR was implemented in the first place. Such a buy-side incentive is just too attractive, even if only as a secondary or unintended benefit of procuring new renewable resources.

[10] While FCM Pay-for-Performance can offer compensation distinctions in scarcity events, there have been very few such intervals of scarcity events since its implementation.

[11] While the Net ICR basis of the MRI demand curve reflects the least common denominator among capacity resources – the ability to meet just the peak hour demand, assuming perfect scheduling foresight and without recognition of relative energy and operating reserve economics, each resource with a CSO presents different energy and operating reserve economic options under the energy offer (and associated performance) obligations required by the CSO. ISO-NE Market Rule 1 Section III.13.6.1.1 requires that resources "having a Capacity Supply Obligation shall be offered into both the Day-Ahead Energy Market and Real-Time Energy Market at a MW amount equal to or greater than its Capacity Supply Obligation whenever the resource is physically available." Section III.13.6.1.1.2 requires that such offers "for the listed portion of a resource must reflect the then-known unit-specific operating characteristics (taking into account, among other things, the physical design characteristics of the unit)"—specifically, a listed resource that must provide flexibility because its design can, while a listed resource which is inflexible can get paid the same for providing less relative value.

- Some have such a high energy price that even with moderate flexibility are so expensive their strike is rarely in the money.
- Others present such a short duration response (e.g., 2-hour battery), that only a small quantity can present value and beyond that penetration, their resource adequacy contribution diminishes quickly.
- Others present long duration support, but their lead time to supply energy is so long that their utility in ISO-NE dispatch is limited largely to foreseeable needs (e.g., fossil steam units).

Stated simply, each capacity supply resource provides a distinct reliability (energy) call option value defined by its combination of flexibility (e.g., time to full load), duration (e.g., 2-hour versus 6-hour or greater), and relative energy price. Despite these value differences, but for the occurrence of Pay-for-Performance (PFP) scarcity events, the existing FCM compensates the least valuable reliability call option (e.g., slow start with expensive energy) the same as a high value resource (e.g., energy often in the money or flexible enough to provide operating reserve) even in significant surplus. Yet, the cost to supply a more valuable reliability call option is often higher than the options provided by other capacity resources that will, rarely, if ever, be struck. This discourages retirement of resources that have reached (or past) their point of obsolescence. Evolution of the fleet is slowed, pushing capacity prices down to FCA clearing price levels that threaten the cash flow needs of the capacity resources supplying valuable energy call options under their CSO.

FirstLight would be concerned if ISO-NE's planned effort "to accurately reflecting the contribution of all resource technologies to resource adequacy" were to only focus on ELCC.[12] ELCC *is* expected to address distinctions on the basis of generation duration capability or how long the energy can be supplied under the call. While an improvement, it will not address the economic value component that further distinguishes reliability call options.[13] That is, a resource with a high qualified capacity rating under ELCC may supply that energy duration under a very high relative energy price or under extremely inflexible unit characteristics, factors that can make its energy call option so expensive to strike that it will rarely, if ever, be struck.

Of course, calculating individual reliability option values for every resource could be complicated, unwieldy and involve numerous assumptions about future conditions. However, there may be a simpler way to fairly distinguish among their contributions. Out of a desire to move the discussion from problems to solutions, FirstLight includes a possible concept worth considering in the attachment (Appendix A) to this written statement.

Meeting Customers' Future Carbon-Free Energy Demand

Much of the discussion regarding accommodation of state policy resource entry in the ISO-NE FCM has been focused on existing state policy mandated by state legislation. This is certainly a necessary predicate of any solution, but it may only be the low bar. Consumers will

[12] ISO-NE May 17 Memo at 2.

[13] However, ELCC might offer partial correction to offset some of the adverse impacts of an FCA 17 MOPR removal under an intermediate step such as that implied by the ISO-NE May 17 Memo.

likely set their own higher bar on how to define their carbon-free energy demand. Indeed, companies like Google, Microsoft and other large energy purchasers have pointed out that the current practice of annual pairing of carbon-free megawatt-hours with their electric consumption (standard in corporate purchasing and state RPS programs alike) fails to adequately assure carbon-free energy consumption consistent with their actual demand—which is what is ultimately needed to run a decarbonized system reliably.[14] Over time, energy consumers need the capability to match the timing and location of carbon-free energy with the timing and location of their actual demand. So, while the New England Power Pool (NEPOOL) Pathway discussions have often focused on designs that could be read to import state Renewable Portfolio Standards (RPS) program bifurcations among renewable technologies, including limiting measurement to their *annual* clean energy credit accounting under state RPS legislation, forward looking energy purchasers will demand greater granularity. While the scale and sophistication of a Google may permit them to work around regional systems that do not meet their needs, small companies (and retail sellers) need the support of regional systems to support pairing of their carbon-free energy purchases with their actual hourly demand. FirstLight urges the Commission and the region to recognize that this is a moment of definitive transition to a low or zero carbon system, and that in order to meet success in delivering that future, we must design market rules for these future needs and not lock the region into the annual averaging and renewable technology bifurcations that define New England states' legislative history. The central role of federally regulated wholesale markets is to provide a level playing field across a region rather than a patchwork of rules that vary state by state.

Connecting the Design Components

Removal of the MOPR requires implementing changes to repair the flawed FCM retirement signal, but a bridge to the other important components (e.g., ELCC) and fair valuation of all carbon-free generation at the wholesale level is needed to encourage cooperation on those elements that may need to lag the targeted Q1 2022 filing. This requires an *a priori* commitment to complete and implement these reforms and deliver the systems to support the carbon-free energy pairing as a condition on Commission approval of any initial filing.

[14] *Google, Microsoft, other companies pursue new certification to back 24/7 clean energy claims*, Utility Dive (May 19, 2021), *available at* https://www.utilitydive.com/news/google-microsoft-other-companies-pursue-new-certification-to-back-247-cl/600423/?utm_source=Sailthru&utm_medium=email&utm_campaign=Issue:%202021-05-19%20Utility%20Dive%20Newsletter%20%5Bissue:34333%5D&utm_term=Utility%20Dive.

APPENDIX A

Performance Capacity Rating (PCR) Concept

FCM Pay-for-Performance (FCM-PFP) was intended to provide shared responsibility for system reliability support by assigning CSO pro-rata responsibility to provide energy or operating reserve performance in scarcity events—periods where the full operating reserve requirement could not be met. This design is most effective when the FCA clears CSO equal to or less than the Net ICR (i.e., at criteria or slightly deficient); however, its effectiveness is muted as FCA surplus increases. In surplus, the probability of scarcity events decreases as does the Capacity Balancing Ratio determining the level of performance requirement assigned to each CSO megawatt. These outcomes encourage continued surplus by reducing the non-performance risk to the resources that contribute the least to active support of the system. Yet, the increased surplus does not change the extent of support provided by the other capacity resources that are frequently relied upon to support system reliability in ISO-NE system operation.

This disconnect requires enhanced technology-neutral, performance-oriented capacity compensation with commensurate penalties for failing to deliver performance in the Commitment Period. This can be accomplished by enhancing the existing FCM-PFP with a distinction between qualified FCA capacity based on its extent of energy and operating reserve supplied in the top 5% of hours of greatest stress on the system revealed through their energy and operating reserve supply in periods of the top 5% of hourly Real-Time Locational Marginal Prices for Energy (RTLMP).[15]

Each resource's historic contribution as energy or operating reserve in peak hours reflects how valuable the resource's reliability call option actually was in those historic periods based on the dispatch economics presented by its combination of energy price, flexibility and supply duration capability. Under this concept, each resource's energy and operating reserve supplied in the hours with the highest 5% of RTLMPs in each year of a 3-5 year historic period would be used to determine a new Performance Capacity Rating (PCR) for each resource. The portion of its qualified capacity rated as PCR would be equal to the average supply of energy and operating reserve supplied in those hours.

Each resource would then have two capacity ratings, a PCR and a Common Capacity Rating (CCR), and there would be two FCA supply curves. Every resource would continue to have a qualified capacity rating based on audited values under the current methodology (or as adjusted by implementation of ELCC), referenced here as its CCR. For example, a 100MW resource whose supply of energy and operating reserve in the top 5% of RTLMP hours in each of the prior 3-5 years averaged 60MW would have an PCR rating of 60MW. That resource would be eligible to sell 60MW as PCR and 40MW as CCR.

The aggregate of all resources' PCR ratings would be reflected in the FCA in a PCR supply curve that would be cleared in a FCA Descending Clock Auction (DCA) round at prices

[15] This would be based on the Hub RTLMP.

equal to or less than Net CONE (i.e., quantities greater than Net ICR). If the aggregate of PCR ratings across all qualified capacity is less than the Net ICR, PCR capacity would clear at Net CONE. If the aggregate of PCR capacity exceeded Net ICR, it would receive the corresponding capacity price on the MRI Demand Curve. The process would work as follows:

(1) At FCA prices above Net CONE, all capacity resources are needed to meet the Net ICR and the PCR supply curve would not be applied.

(2) At FCA DCA rounds below Net CONE, the PCR supply curve would be applied and resources could receive a CSO award up to their PCR rating at that clearing price. Those CSO megawatts would be reflected as price-takers in the subsequent clearing of the CCR supply curve. A resource with a PCR CSO award could subsequently elect to de-list the entire resource if the sum of the later CCR CSO award and PCR CSO award was insufficient; however, such a reduction in PCR CSO in a later Descending Clock Auction round would not change the PCR capacity clearing price.

(3) PCR CSO megawatts would be paid at the higher PCR clearing price and the non-PCR CSO megawatts would be paid at the lower CCR clearing price. The FCM-PFP Capacity Balancing Ratio would be modified to provide more performance responsibility to the higher paid PCR capacity than the lower priced CCR capacity based on their relative FCA clearing prices.[16]

Where significant surplus of CCR exists, its lower FCA clearing price will encourage efficient retirement while the resources ISO-NE frequently relies upon, PCR capacity, can receive sufficient FCM revenues to continue to reliably provide their system support.

This structure would accomplish the objectives of the capacity market to "facilitate robust competition for capacity supply obligations, provide price signals that guide the orderly entry and exit of capacity resources, result in the selection of the least-cost set of resources that possess the attributes sought by the markets, . . . [and] provide price transparency. . ."[17] The mix of PCR resources would evolve with the changing system supply.

[16] The FCM-PFP Capacity Balancing Ratio would be multiplied by the following values:

For PCR CSO megawatts: PCR clearing price * Total PCR CSO/(PCR clearing price * Total PCR CSO + CCR clearing price * CCR CSO).
For CCR CSO megawatts: CCR clearing price * Total CCR CSO/(PCR clearing price * Total PCR CSO + CCR clearing price * CCR CSO).

[17] CASPR Order at P 21.